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WILLIAM ANDREAS BRASTAD(54) PACKAGING OF CHIP-TYPE SNACK  
FOOD PRODUCTS

(71) We, GENERAL MILLS INC., a corporation of the State of Delaware, United States of America of 9200 Wayzata Boulevard, Minneapolis, Minnesota 55424, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The packaging of chip-type snack food products, such as potato chips, as generally practiced, involves placing the product into a bag in a random unoriented manner. Such bags are made from one or more sheets of waxed paper or glassine. This type of bag, while relatively inexpensive, provides little protection to the fragile chips from handling and shipping loads. Thus, it is quite common to have a number of broken chips in the bags.

Another possible package for chip-type snack food products involves vertically stacking the chips one upon the other to form a straight column and placing such column within a substantially rigid, tubular container. The tubular container may be sealed closed by securing ends thereto. It has been found that when such a container is dropped down on one of such ends that the chips nearest such end break. Broken chips do not normally meet with consumer acceptance.

According to the present invention there is provided a package of uniformly-shaped chip-type snack food products, said package including a shaped container and a plurality of chips of substantially uniform shape and size nested one against the other in closely fitting relationship to form an elongate array of chips, said elongate array of chips having a longitudinal axis which is substantially curved, and said container including first and second members enclosing said array of chips therebetween and each providing circumferential edge support for said chips over the axial extent of said array to locate said chips in place.

In the case of the aforementioned known package in which chips are stacked in a straight column within a tubular container shocks induced in the axial direction of the column as by dropping the tubular container on its end result in shock loads being borne predominantly by chips in the end regions of the column with consequent breakage of chips in those regions. By providing an array of substantial curvature, the present invention avoids this disadvantage as shock loads cannot readily be transferred along a substantially curved array of chips.

Thus the practical effect of the invention is to ensure that even under shock loads the chips are individually supported in their circumferential edges to greater extent than is possible in the known straight column package referred to previously.

This is particularly so, if, as is preferred, the array of chips is an endless e.g. circular loop array as having no beginning or ending the possibility of an impact on the end of the array is eliminated. Nonetheless an endless array is not essential and in another embodiment of the invention said array of chips is of arcuate shape and said container includes end walls shaped to support the major surfaces of the chips at the ends of said array.

The container members may be made of any suitable material which can be formed such as metal, plastics, paper or combinations thereof and which does not result in taste or odour transfer to the chips. Said members may be of unitary or composite construction and will be sufficiently strong and rigid to withstand anticipated handling and shipping loads.

In one preferred embodiment of said first and second members is shaped to receive said array therewithin and the other member constitutes a cover for said one member, said one member having a bottom wall shaped to conform to circumferential edge portions of the chips in said array.

Preferably said one member is bowl

5 shaped having a side wall and said bottom and said side wall is also shaped to conform to further circumferential edge portions of said chips in said array, said cover member being secured to the upper edge of the side wall of said bowl shaped member.

10 In an alternative embodiment said first member defines a chamber shaped to conform to first circumferential edge portions of the chips in said array and the second member likewise defines a chamber shaped to conform to second circumferential edge portions of the chips in said array.

15 The first and second members may substantially surround the circumferential edges of the chips in said array.

20 Desirably the chips are curved in at least one plane to form surfaces providing an interlocking effect in the array.

25 Alternatively, the products could have upper and lower major surfaces curved in each of two orthogonal planes. While many shaped variations within this framework are possible, it is desirable in the marketing of potato chips or similar products to use the general shape in which such chips are presently marketed since that is a form with which customers are familiar.

30 Although it is possible to use uniform products having a planar disc-type shape, it is preferred that the products used in practicing the present invention be non-polar in shape since as mentioned above this permits some degree of interfitting of adjacent chips.

35 The invention will be further described with reference to certain preferred embodiments illustrated in the drawings which form part of this application wherein:

40 Figure 1 is an elevational view of a package according to the present invention partially broken away to show the arrangement of the contents within the container;

45 Fig. 2 is a cross-sectional view of the package shown in Figure 1 taken along the line 2—2;

50 Fig. 3 is a top view of the package shown in Figure 1 with the top of the package removed;

Fig. 4 is a perspective view of one form of chip which may be contained in the package shown in Figure 1; and

55 Fig. 5 is a cross-sectional view of the chip shown in Fig. 4 taken along the line 5—5.

Fig. 6 shows another embodiment of present invention including a discontinuous ring of chips.

60 Fig. 7 is a cross sectional view taken along the line 7—7 in Figure 6;

Fig. 8 is a side and end view of a snack chip suitable for use in this embodiment of the present invention.

65 Referring now to the drawings, Figures 1 and 2 show a bowl shaped member 10

having a bottom 12 of circular shape, an upstanding side wall 14, and an outwardly extending top flange 16. The bottom 12 has a raised portion 18 and a curved portion 20. The side walls 14 and curved portion 20 are designed to conform to the outside and bottom circumferential edge portions, respectively, of the chip-type snack food product 22 to be packaged therein.

70 The outwardly extending top flange 16 is adapted to hold a cover 24 in place across the top of the container 10. The cover 24 is snugly fit over the flange 16 by means of a downwardly extending lip 26. The container formed of member 10 and cover 24 can be constructed of any material that can be formed, such as metal, plastic, paper, or combination thereof, and which are sufficiently strong and rigid to withstand handling and shipping loads. Drawn aluminium has been used to make a container 10 while pressboard lined with aluminium foil has been used to make a cover 24.

80 The cover 24 may also be secured to the flange 16 by gluing, heat sealing or other adhesive means.

85 The products to be packaged are thin and substantially uniform in both shape and size so they can be nested one within the other to form a loop, preferably, a closed loop. Preferably this closed loop is in the form of a circular array. Non-uniform products cannot be effectively nested in a closed loop and thus must be randomly distributed within the package. Such an approach results in a package which permits the products to be more easily damaged in handling. The uniformity of the products extends to the size of the products as well as the general shape and surface curvature.

90 Figs. 4 and 5 illustrate a type of uniform product which can be successfully packaged according to the present invention. The product 28 preferably has an upper curved major surface 30 and a lower curved major surface 32. These surfaces 30 and 32 are formed from single curves. This permits nesting one within another to permit forming them in a closed loop as readily seen in Fig. 3. In the circular array of the products as shown in Fig. 3, the products are nested one within another with their corresponding surfaces similarly oriented. They are then placed in a member 10 which is adapted to enclose this loop array. After being placed into such member 10, it is sealed closed by securing the cover to the flange thereof. The products can be conveniently removed from the container after removing the cover thereof either individually, in batches of two or more, or by inverting the member 10 and thereby permit the entire looped array to be placed on a surface as a looped array.

The container shown in Figures 6—8 provides for a loop array of chips which is discontinuous. The container includes a lower member 13e and an upper member 14e. The member 14e (Figure 6) has a pair of zones 100 and 101 which are shaped in cross section substantially like circumferential edge portion of the nested chips such as U-shaped. The zones 100 and 101 have the end walls 102 and 103 which are shaped like the upper and lower major surfaces of the chips. A center web 33e extends to the outer flange 34e. The member 13e is a mirror image of member 14e. The container 11e is closed by positioning member 14e over member 13e and slight pressure is applied so that the lower portion of wall 105 snaps over flange 34e.

Fig. 8 shows a form of chip 18 suitable for the embodiment having major curved surfaces 47, 48 to which the end walls 103, 102 are respectively adapted to conform. It will be appreciated that in this embodiment the container members substantially surround and support the circumferential edges of the chips.

The container of Figs. 6 and 7 could of course be readily adapted to house a continuous circular array of chips by making zones 100 and 101 continuous and thus omitting end walls 102, 103.

The present invention is applicable to packaging, numerous chip-type snack food products which are uniform in size and shape so they can be nested one within another to form a loop array. Specifically, it can be used with chips made from thin slices of raw potato. Alternatively, it can be used with chips which are made from a formulated, potato-based dough which is rolled into sheets having a thickness of from about 0.009 inch to about 0.30 inch, preferably, about 0.020 to 0.10 inch, typically 0.050 inch and from which substantially equal shaped sections are cut and fried.

While the invention has been described in detail with specific examples, such examples are illustrative and are not given as limitations since other modifications within the sphere and scope of the invention will be apparent to those skilled in the art. For example, the size and shape of the products to be packaged may be varied widely as long as the particular size and shape of a given product placed in a single package are all uniform.

#### WHAT WE CLAIM IS:—

1. A package of uniformly-shaped chip-type snack food products, said package including a shaped container and a plurality of chips of substantially uniform shape and

size nested one against the other in closely fitting relationship to form an elongate array of chips, said elongate array of chips having a longitudinal axis which is substantially curved, and said container including first and second members enclosing said array of chips therebetween and each providing circumferential edge support for said chips over the axial extent of said array to locate said chips in place.

2. A package as claimed in claim 1 wherein said array is an endless loop array.

3. A package as claimed in claim 2 wherein said endless loop array is a circular array.

4. A package as claimed in any of the preceding claims wherein one of said first and second members is shaped to receive said array therewithin and the other member constitutes a cover for said one member, said one member having a bottom wall shaped to conform to circumferential edge portions of the chips in said array.

5. A package as claimed in claims 3 and 4 or claims 2 and 4 wherein said one member is bowl-shaped having a side wall and said bottom wall and wherein said side wall is also shaped to conform to further circumferential edge portions of said chips in said array, said cover member being secured to the upper edge of the side wall of said bowl-shaped member.

6. A package as claimed in claim 1 wherein said array of chips is of arcuate shape and said container includes end walls shaped to support the major surfaces of the chips at the ends of said array.

7. A package as claimed in claim 6 including two arcuate shaped arrays of chips arranged as a discontinuous ring.

8. A package as claimed in any one of claims 1 to 3 wherein said first member defines a chamber shaped to conform to first circumferential edge portions of the chips of the chips in said array and the second member likewise defines a chamber shaped to conform to second circumferential edge portions of the chips in said array.

9. A package as claimed in claim 8 wherein the first and second members substantially surround the circumferential edges of the chips in said array.

10. A package as claimed in any of claims 1 to 9 wherein said chips are curved in at least one plane to form surfaces providing an interlocking effect in the array.

11. A package as claimed in any of the preceding claims wherein said first and second members are of unitary constructions and said chips are supported directly by internal surfaces of said members.

12. A package of uniformly-shaped chip-

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type snack food products substantially as described with reference to figures 1 to 5 of the accompanying drawings.

5. 13. A package of uniformly-shaped chip-type snack food products substantially as described with reference to figures 6 to 8.

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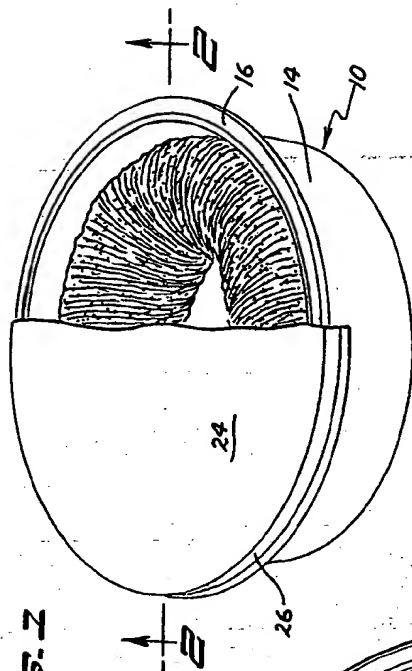


FIG. 1

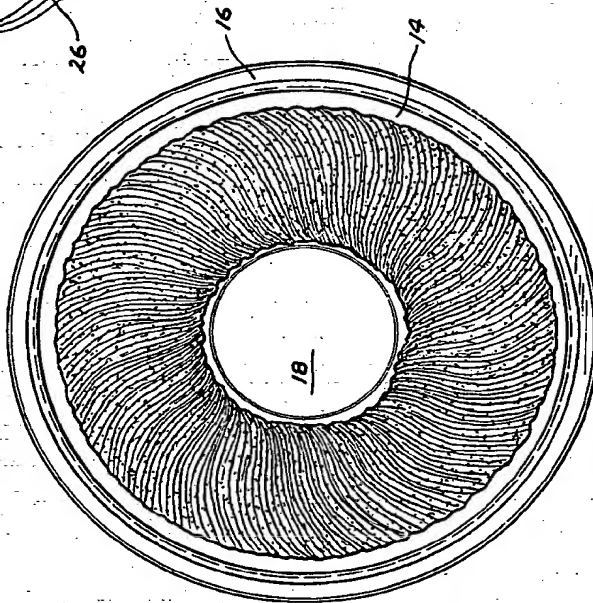


FIG. 2

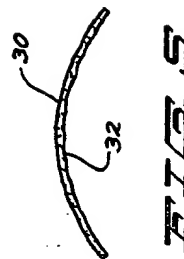
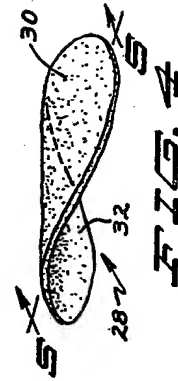
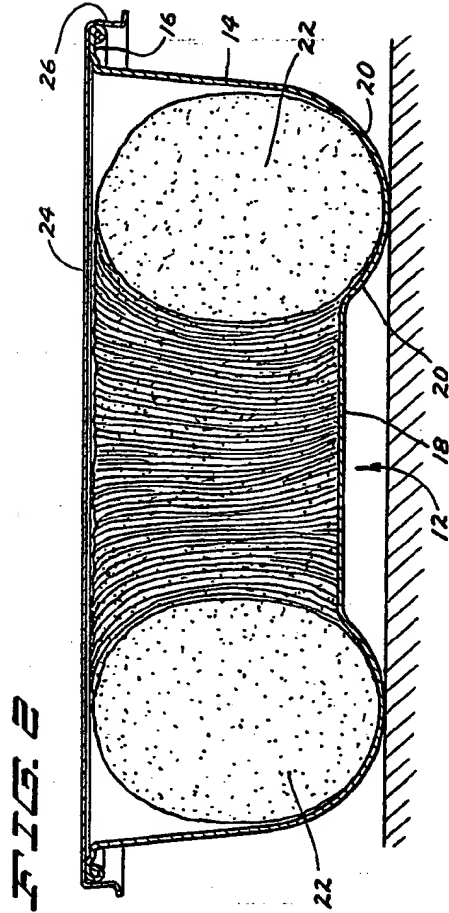


FIG.6.

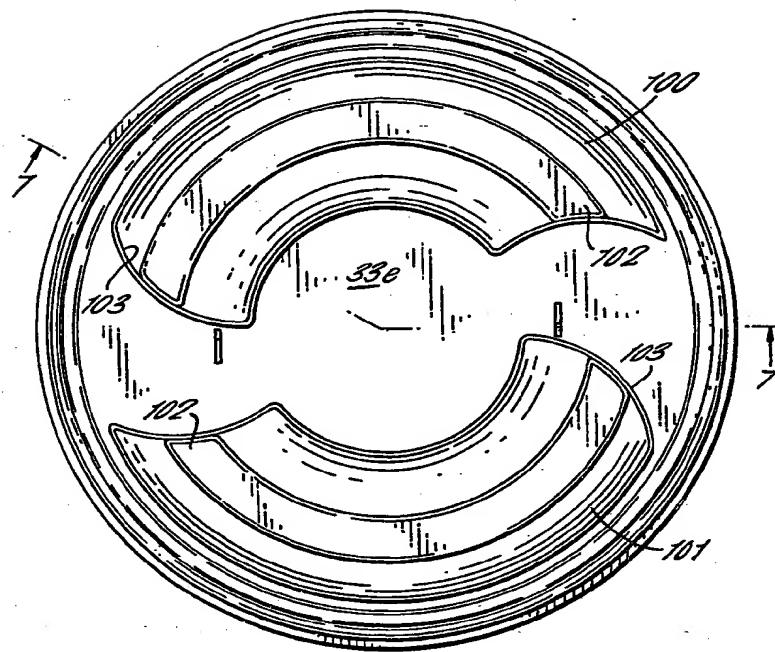


FIG. 7.

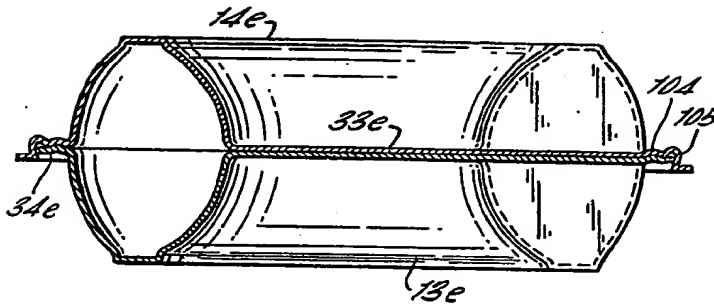


FIG. 8.

